emissions produced by the MES

i) NOTE 5: With the purposes of GLONASS system receivers protection:

ii) the MES should not operate in the following frequency bands :

- 1610.0 - 1618.25 MHz - up to 1999;
- 1610.0 - 1615.0 MHz - from 1999 to 2008.

iii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following bands:

- 1610.0 - 1620.61 MHz up to 1999;
- 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE A4

Maximum unwanted emissions of MES carriers within the assigned band of CDMA carriers (NOTE 4)

Frequency offset (NOTE 1) (kHz)	**Carrier-on**		
	e.i.r.p. (NOTE 3) (dBW)	**Measurement bandwidth (kHz) (NOTE 2)**	
0 to 70	- 6 to - 20	30	
70 to 600	- 20 to - 28	30	
600 to 2 000	- 28 to - 45	30	
2 000 to 5 000	- 45 to - 69	30	
5 000 to 16 500	- 69	30	

NOTE 1: Frequency offset is determined from edge of nominated bandwidth.

NOTE 2: The measurement bandwidth used may be 3 kHz if the unwanted e.i.r.p. limits are reduced correspondingly.

NOTE 3: Linearly interpolated in dBW vs. frequency offset.

i) NOTE 4: With the purposes of GLONASS system receivers protection:

ii) the MES should not operate in the following frequency bands :

- 1610.0 - 1623.0 MHz - up to 1999;
- 1610.0 - 1615.0 MHz - from 1999 to 2008.

iii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following bands:

- 1610.0 - 1620.61 MHz up to 1999;
- 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE A5

Maximum e.i.r.p. of the unwanted emissions in the carrier-off state

Frequency (MHz)	**e.i.r.p. (dBW)**	**Measurement bandwidth**
0.1 - 30	- 87	10 kHz
30 - 1 000	- 87	100 kHz
1 000 - 12 750	- 77	100 kHz

NOTE: These values, and a corresponding measurement method, are specified in [IEC (insert proper citation).]

NOTE: Receiver Radiation is radio frequency energy that emanates from a device that intentionally generates RF energy for use within a device or that sends RF signals by conduction to associated equipment via connecting wiring while the transmitter is not in operation.

TABLE B1A

Maximum Unwanted emission outside the band 1 980 - 2 010 MHz**

Frequency	**Carrier-on**				
	e.i.r.p. (dBW)		**Measurement bandwidth**		
(MHz)	TDMA carriers	CDMA carriers (NOTE[1])	TDMA carriers	CDMA carriers	
0.1 - 30	- 66		10 kHz		
30 - 1 000	- 66		100 kHz		
1 000 - 1559	- 60		3 MHz		
~~[~~1 559 - 1 610~~]~~	~~[~~-70~~]~~ ~~See NOTE 3~~		1 MHz		
~~[~~1 610 - 1 620.6~~]~~	~~[~~-70~~]~~		1 MHz		
[1 620.6 - 1 950]	- 60		3 MHz		
1 950 - 1 960	- 60		1 MHz		
1 960 - 1 970	- 60		300 kHz		
1 970 - 1 975	- 60		100 kHz		
1 975 - 1 978	- 60	-64 to -40	30 kHz	100 kHz	
1 978 - 1 980	The levels in Table B2 or Table B3 as appropriate for the frequency offset 0 - 2 MHz shall apply from 1 980 to 1 978 MHz				
1 980 - 2 010 (NOTE 2)	N/A		N/A		
[2 010 - 2 012	The levels in Table B2 or Table B3 as appropriate for the frequency offset 0 - 2 MHz shall apply from 2 010 to 2 012 MHz				
2 012 - 2 015	- 60	-40 to -64	30 kHz	100 kHz	
2 015 - 2 020	- 60		100 kHz		
2 020 - 2 030]*	- 60		300 kHz		
2 030 - 2 040	- 60		1 MHz		
2 040 - 2600	- 60		3 MHz		
2 600 - 12 750	-60		3 MHz		
NOTE 1: Linearly interpolated in dBW vs. frequency ~~NOTE 3: Average~~					

~~*Editor's NOTE: It is noted that there is a Region 2 co-primary allocation to the MSS in the band 2 010 - 2 025 MHz. Terminals operating in this band could have main emissions which would not be consistent with the values in this Table. This issue must be addressed in the final version of this table.~~

TABLE B2

Maximum unwanted emissions of TDMA carriers within the 1 980 - 2 010 MHz assigned band

Frequency offset (NOTE 1) (kHz)	Carrier-on		
	e.i.r.p. (dBW)	Measurement bandwidth (kHz)	
0 to 166	0 - (offset × 55/166)	3 kHz	
166 to 575	- 55	3 kHz	
575 to 1 175	- 60	3 kHz	
1 175 to 1 525	-50 - ((offset - 1 175) × 5/350)	30 kHz	
1 525 to 30 000	- 55	30 kHz	
NOTE 1: Frequency offset is determined from edge of nominated bandwidth.			

TABLE B3

Maximum unwanted emissions of CDMA carriers within the 1 980 - 2 010 MHz assigned band

Frequency offset (NOTE 1) (kHz)	Carrier-on		
	e.i.r.p. (NOTE 2) (dBW)	Measurement bandwidth (kHz)	
[0 to 70]	[- 6 to - 20]	[30]	
[70 to 600]	[- 20 to - 28]	[30]	
[600 to 2 000]	[- 28 to - 45]	[30]	
[2 000 to 5 000]	[- 45 to - 69]	[30]	
[5 000 to 30 000]	[- 69]	[30]	
NOTE 1: Frequency offset is determined from edge of nominated bandwidth. NOTE 2: Linearly interpolated in dBW vs frequency offset.			

TABLE B4

Maximum e.i.r.p. of the unwanted emissions in the carrier-off state

Frequency (MHz)	e.i.r.p. (dBW)	Measurement bandwidth
0.1 - 30	- 87	10 kHz
30 - 1 000	- 87	100 kHz
1 000 - 12 750	- 77	100 kHz

NOTE: These values, and a corresponding measurement method, are specified in [IEC (insert proper citation).]

NOTE: Receiver Radiation is radio frequency energy that emanates from a device that intentionally generates RF energy for use within a device or that sends RF signals by conduction to associated equipment via connecting wiring while the transmitter is not in operation.

Modifications to Annex 1

ANNEX 2A

Essential technical requirements of MES for global NGSO MSS systems in the bands 1 - 3 GHz using TDMA

This Annex contains essential technical requirements for MES terminals of global NGSO MSS systems using TDMA and operating in the bands 1 - 3 GHz. ~~The tables on the following pages of this Annex summarize the maximum unwanted emission requirements for such terminals. In addition to these unwanted emission requirements there is an additional requirement for automatic shut-off features of MES terminals which is:~~

These requirements are:

a) restrictions on operation in the frequency band 1610 - 1626.5 MHz up to 2008;

b) requirements for the MSS terminals unwanted emissions specified in the below tables;

c) requirements for automatic shut-off features of MSS terminals.

Restrictions on operation in the frequency band 1610 - 1626.5 MHz:

The frequency band 1610-1626.5 MHz should be used by MES terminals ensuring required protection of GLONASS receivers. Therefore the MES should not operate in the following frequency bands :

- 1610.0 - 1623.0 MHz - up to 1999;
- 1610.0 - 1615.0 MHz - from 1999 to 2008.

Automatic Shut-off Features: The MES shall include a means of identifying whether there is a malfunctioning processor or other fault in its operation and be capable of automatically shutting down transmissions in the case of an identified malfunction no later than one second after a malfunction has been identified.

Throughout this Recommendation, various terms, which are defined in the Radio regulations are used. In addition to these terms there is an additional essential term which must be defined as follows:

Nominated bandwidth (B_n): The B_n of the Mobile earth station (MES) radio frequency transmission is wide enough to encompass all spectral elements of the transmission which have a level greater than the specified levels of unwanted emissions. The B_n is defined relative to the MES actual carrier frequency f_c.

B_n is the width of the frequency interval (f_c -a, f_c +b), where a and b, which shall be specified by the terminal manufacturer, may vary with f_c.

The frequency interval (f_c -a, f_c +b) shall not encompass more than either:

i) when a = b, 4 nominal carrier frequencies for narrow-band systems

ii) when a ≠ b, 1 nominal carrier frequency for narrow-band systems, or

iii) 1 nominal carrier frequency for wide-band systems.

The frequency interval (f_c -a, f_c +b) shall be within the assigned band of the MES.

TABLE 2A-A1

Maximum unwanted emissions outside the band 1 610 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz using TDMA Access Technique (NOTE 2)

Frequency (MHz)	Carrier-on e.i.r.p. (dBW)	Measurement Bandwidth
0.1 - 30	- 66	10 kHz
30 - 1 000	- 66	100 kHz
1 000 - 1 559	-60 (NOTE 3bis)	1 MHz
1 559 - 1 573.42	[TBD] (NOTE 3bis) (NOTE 4)	1 MHz
1 573.42 - 1 577.42	-70 (NOTE 3)	1 MHz
1 577.42 - 1 590	[TBD] (NOTE 3bis) (NOTE 4)	1 MHz
~~[1 590 - 1 600 1 600 - 1 605] (NOTE 5)(NOTE 6)~~	~~[TBD] (NOTE 3bis) (NOTE 7) (NOTE 8)~~	~~1 MHz~~
~~[1 605 - 1 610] (NOTE 6)~~	~~[TBD] (NOTE 1) (NOTE 7)~~	~~1 MHz~~
1590 - 1610	-70	1 MHz
1 610 - 1 626.5 [(NOTE 2)]	N/A	N/A
1 626.5 - 1 628.5	N/A	N/A
1 628.5 - 1631.5	-60	30 kHz
1 631.5 - 1 636.5	-60	100 kHz
1 636.5 - 1 646.5	- 60	300 kHz
1 646.5 -1 666.5	- 60	1 MHz
1 666.5 - 2 200	-60	3 MHz
2 200 - 2 750	-60	3 MHz

~~[NOTE 1: A range of values of -69 to -19 dB(W/30 kHz), linearly interpolated in dBW vs. frequency, was proposed for this frequency range.]~~

~~[NOTE 2: Mobile earth stations shall operate in the frequency band 1 610-1 626.5 MHz, taking into account the modification of the GLONASS frequency plan, such as:~~
~~before 1 999 - 1 620.6 to 1 626.5 MHz;~~
~~from 1 999 2 005 - 1 614.4225 to 1 626.5 MHz;~~
~~from 2 005 - 1 610. to 1 626.5 MHz]~~
~~[Maximum level of MES unwanted emissions shall not exceed -70~~

~~dBW/MHz in the GPS and GLONASS bands]~~

NOTE 2: With the purposes of GLONASS system receivers protection:

i) the MES should not operate in the following frequency bands :
   - 1610.0 - 1623.0 MHz - up to 1999;
   - 1610.0 - 1615.0 MHz - from 1999 to 2008.

ii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following bands:
   - 1610.0 - 1620.61 MHz up to 1999;
   - 1610.0 - 1613.86 MHz from 1999 to 2008;

NOTE 3: Averaged over 20 mS

NOTE 3bis: [Average]. Measurement time to be determined.

NOTE 4: The value in this frequency range is bounded by the range -60 to -70.

~~NOTE 5: The band split shown in this table comes from ETSI document ETS 300 733~~

~~NOTE 6: The Russian Federation Administration expressed a preference to have these frequency bands combined.~~

~~NOTE 7: The Russian Federation Administration stated that it will require a value of [-70 dB(W/MHz)] in the band 1 590 - 1 610 for the protection of the GLONASS system, unless otherwise agreed.~~

~~NOTE 8: The US Administration is presently considering emission limits (in dBW/MHz) ranging from -70 to -54 from the MSS community and -70 from the aeronautical community.~~

Specification:

The maximum e.i.r.p. of the unwanted emissions inside the band 1 610.0 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz from MESs operating within the band 1 610.0 to 1 626.5 MHz shall not exceed the limits in tables A1, A2 or A3, as applicable. For non-continuous signals, the measurement shall be performed over the active part of the burst.

TABLE 2A-A2

Maximum unwanted emissions within the allocated band 1 610.0 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz of MES operating such that the nominated bandwidth is entirely or partially contained in the frequency band 1 618.25 to 1 626.5 MHz (NOTE 4) (NOTE 5)

Frequency Offset (NOTE 1) (kHz)	Carrier-on		
	e.i.r.p. (NOTE 3) (dBW)	Measurement bandwidth (kHz) (NOTE 2)	
0 to 160	- 35	30	
160 to 225	- 35 to - 38,5	30	
225 to 650	- 38.5 to - 45	30	
650 to 1 365	- 45	30	

1 365 to 1 800	- 53 to - 56	30	
1 800 to 16 500	- 56	30	

NOTE 1: Frequency offset is determined from:
i) the nearest edge of the nominated bandwidth of the nominal carrier closest to the MSS system operating in another assigned band within the band 1 610 to 1 626.5 MHz The frequency offset is measured in the direction of the adjacent MSS system.
ii) the upper edge of the nominated bandwidth of the carrier under test for emissions within the band 1 626.5 to 1 628.5 MHz.

NOTE 2: The measurement bandwidth used may be 3 kHz if the unwanted e.i.r.p. limits are reduced correspondingly.

NOTE 3: Linearly interpolated in dBW vs frequency offset.
NOTE 4: The MES shall include means of inhibiting transmissions when necessary to protect the Radio Astronomy Service in the 1 610.6 - 1 613.8 MHz band from emissions produced by the MES
NOTE 5: With the purposes of GLONASS system receivers protection:
i) the MES should not operate in the frequency band 1618.25-1623.0 MHz up to 1999;
ii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following band:
- 1610.0 - 1620.61 MHz up to 1999;
- 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE 2A-A3

Maximum unwanted emissions within the allocated band 1 610.0 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz of MES operating such that the nominated bandwidth is entirely contained in the frequency band 1 610.0 to 1 618.25 MHz (NOTE 5)

Frequency Offset (NOTE 1) (kHz)	**Carrier-on**		
	e.i.r.p. (NOTE 3) (dBW)	**Measurement bandwidth (kHz) (NOTE 2)**	
0 to 160	- 32	30	
160 to 2 300	- 32 to - 56	30	
2 300 to 16 500	- 56	30	

NOTE 1: Frequency offset is determined from:
i) the nearest edge of the nominated bandwidth of the nominal carrier closest to the MSS system operating in another assigned band within the band 1 610 to 1 626.5 MHz The frequency offset is measured in the direction of the adjacent MSS system.
ii) the upper edge of the nominated bandwidth of the carrier under test for emissions within the band 1 626.5 to 1 628.5 MHz.
NOTE 2: The measurement bandwidth used may be 3 kHz if the unwanted e.i.r.p. limits are reduced correspondingly.
NOTE 3: Linearly interpolated in dBW vs frequency offset.

NOTE 4: The MES shall include means of inhibiting transmissions when necessary to protect the Radio Astronomy Service in the 1 610.6 - 1 613.8 MHz band from emissions produced by the MES.

NOTE 5: With the purposes of GLONASS system receivers protection:

i) the MES shou d not operate in the following frequency bands :
   - 1610.0 - 1618.25 MHz - up to 1999;
   - 1610.0 - 1615.0 MHz - from 1999 to 2008.

ii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following bands:
   - 1610.0 - 1620.61 MHz up to 1999;
   - 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE 2A-A4

Maximum unwanted emissions of MES carriers within the assigned band of CDMA carriers (NOTE 4)

Frequency offset (NOTE 1) (kHz)	**Carrier-on**		
	e.i.r.p. (NOTE 3) (dBW)	**Measurement bandwidth (kHz) (NOTE 2)**	
0 to 70	- 6 to - 20	30	
70 to 600	- 20 to - 28	30	
600 to 2 000	- 28 to - 45	30	
2 000 to 5 000	- 45 to - 69	30	
5 000 to 16 500	- 69	30	

NOTE 1: Frequency offset is determined from edge of nominated bandwidth.

NOTE 2: The measurement bandwidth used may be 3 kHz if the unwanted e.i.r.p. limits are reduced correspondingly.

NOTE 3: Linearly interpolated in dBW vs. frequency offset.

NOTE 4: With the purposes of GLONASS system receivers protection:

i) the MES should not operate in the following frequency bands :
   - 1610.0 - 1623.0 MHz - up to 1999;
   - 1610.0 - 1615.0 MHz - from 1999 to 2008.

ii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following frequency bands :
   - 1610.0 - 1620.61 MHz up to 1999;
   - 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE 2A-A5

Maximum e.i.r.p. of the unwanted emissions in the carrier-off state

Frequency (MHz)	**e.i.r.p. (dBW)**	**Measurement bandwidth**
0.1 - 30	- 87	10 kHz
30 - 1 000	- 87	100 kHz
1 000 - 12 750	- 77	100 kHz

NOTE: These values, and a corresponding measurement method, are specified in IEC (insert proper citation).

NOTE: Receiver Radiation is radio frequency energy that emanates from a device that intentionally generates RF energy for use within a device or that sends RF signals by conduction to associated equipment via connecting wiring while the transmitter is not in operation.

TABLE 2A-B1

Maximum Unwanted emission outside the band 1 980 - 2 010 MHz* using TDMA Access Technique

Frequency (MHz)	**Carrier-on**		
	e.i.r.p. (dBW)	**Measurement bandwidth**	
	TDMA carriers	**TDMA carriers**	
0.1 - 30	- 66	10 kHz	
30 - 1 000	- 66	100 kHz	
1 000 - 1559	- 60	3 MHz	
~~[~~1 559 - 1 610~~]~~	~~[-70]~~ ~~See NOTE 3~~	1 MHz	
~~[~~1 610 - 1 620.6~~]~~	~~[-70]~~	1 MHz	
[1 620.6 - 1 950]	- 60	3 MHz	
1 950 - 1 960	- 60	1 MHz	
1 960 - 1 970	- 60	300 kHz	
1 970 - 1 975	- 60	100 kHz	
1 975 - 1 978	- 60	30 kHz	
1 978 - 1 980	The levels in Table 2A-B2 or Table 2A-B3 as appropriate for the frequency offset 0 - 2 MHz shall apply from 1 980 to 1 978 MHz		
1 980 - 2 010 (NOTE 2)	N/A	N/A	
[2 010 - 2 012	The levels in Table 2A-B2 or Table 2A-B3 as appropriate for the frequency offset 0 - 2 MHz shall apply from 2 010 to 2 012 MHz		
2 012 - 2 015	- 60	30 kHz	
2 015 - 2 020	- 60	100 kHz	
2 020 - 2 030]*	- 60	300 kHz	
2 030 - 2 040	- 60	1 MHz	
2 040 - 2600	- 60	3 MHz	
2 600 - 12 750	-60	3 MHz	
NOTE 1: Linearly interpolated in dBW vs. frequency ~~**NOTE 3**: Average~~			

~~***Editor's NOTE**: It is noted that there is a Region 2 co-primary allocation to the MSS in the band 2 010 - 2 025 MHz. Terminals operating in this band could have main emissions which would not be consistent with the values in this Table. This issue must be addressed in the final version of this table.~~

TABLE 2A-B2

Maximum unwanted emissions of TDMA carriers within the 1 980 - 2 010 MHz assigned band

Frequency offset (NOTE 1) (kHz)	Carrier-on		
	e.i.r.p. (dBW)	Measurement bandwidth (kHz)	
0 to 166	0 - (offset × 55/166)	3 kHz	
166 to 575	- 55	3 kHz	
575 to 1 175	- 60	3 kHz	
1 175 to 1 525	- 50 - ((offset - 1 175) × 5/350)	30 kHz	
1 525 to 30 000	- 55	30 kHz	
NOTE 1: Frequency offset is determined from edge of nominated bandwidth.			

TABLE 2A-B3

Maximum e.i.r.p. of the unwanted emissions in the carrier-off state for TDMA systems

Frequency (MHz)	e.i.r.p. (dBW)	Measurement bandwidth
0.1 - 30	- 87	10 kHz
30 - 1 000	- 87	100 kHz
1 000 - 12 750	- 77	100 kHz

NOTE: These values, and a corresponding measurement method, are specified in IEC (insert proper citation).

NOTE: Receiver Radiation is radio frequency energy that emanates from a device that intentionally generates RF energy for use within a device or that sends RF signals by conduction to associated equipment via connecting wiring while the transmitter is not in operation.

Modifications to Annex 1

ANNEX 2B

Essential Technical Requirements of MES for Global NGSO MSS systems in the bands 1 - 3 GHz using CDMA

This Annex contains essential technical requirements for MES terminals of global NGSO MSS systems using CDMA and operating in the bands 1 - 3 GHz. ~~The tables on the following pages of this Annex summarize the maximum unwanted emission requirements for such terminals. In addition to these unwanted emission requirements there is an additional requirement for automatic shut-off features of MES terminals which is:~~

These requirements are:

a) restrictions on operation in the frequency band 1610 - 1626.5 MHz up to 2008;

b) requirements for the MSS terminals unwanted emissions specified in the below tables;

c) requirements for automatic shut-off features of MSS terminals.

Restrictions on operation in the frequency band 1610 - 1626.5 MHz:

The frequency band 1610-1626.5 MHz should be used by MES terminals ensuring required protection of GLONASS receivers. Therefore the MES should not operate in the following frequency bands :

- 1610.0 - 1623.0 MHz - up to 1999;
- 1610.0 - 1615.0 MHz - from 1999 to 2008.

Automatic Shut-off Features : The MES shall include a means of identifying whether there is a malfunctioning processor or other fault in its operation and be capable of automatically shutting down transmissions in the case of an identified malfunction no later than one second after a malfunction has been identified.

Throughout this Recommendation, various terms, which are defined in the Radio regulations are used. In addition to these terms there is an additional essential term which must be defined as follows:

Nominated bandwidth (B_n): The B_n of the Mobile earth station (MES) radio frequency transmission is wide enough to encompass all spectral elements of the transmission which have a level greater than the specified levels of unwanted emissions. The B_n is defined relative to the MES actual carrier frequency f_c.

B_n is the width of the frequency interval (f_c -a, f_c +b), where a and b, which shall be specified by the terminal manufacturer, may vary with f_c.

The frequency interval (f_c -a, f_c +b) shall not encompass more than either:

i) when a = b, 4 nominal carrier frequencies for narrow-band systems;

ii) when a ≠ b, 1 nominal carrier frequency for narrow-band systems; or

iii) 1 nominal carrier frequency for wide-band systems.

The frequency interval (f_c -a, f_c +b) shall be within the assigned band of the MES."

TABLE 2B-A1

Maximum unwanted emissions outside the band 1 610 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz using CDMA Access Technique (NOTE 2)

Frequency (MHz)	Carrier-on e.i.r.p. (dBW)	Measurement Bandwidth
0.1 - 30	- 66	10 kHz
30 - 1 000	- 66	100 kHz
1 000 - 1 559	-60 (NOTE 3bis)	1 MHz
1 559 - 1 573.42	[TBD] (NOTE 3bis) (NOTE 4)	1 MHz
1 573.42 - 1 577.42	-70 (NOTE 3)	1 MHz
1 577.42 - 1 590	[TBD] (NOTE 3bis) (NOTE 4)	1 MHz
~~[1 590 - 1 600 1 600 - 1 605] (NOTE 5)(NOTE 6)~~	~~[TBD] (NOTE 3bis) (NOTE 7) (NOTE 8)~~	~~1 MHz~~
~~[1 605 - 1 610] (NOTE 6)~~	~~[TBD] (NOTE 1) (NOTE 7)~~	~~1 MHz~~
1590 -1610	-70	1 MHz
1 610 - 1 626.5 [(NOTE 2)]	N/A	N/A
1 626.5 - 1 628.5 –	N/A	N/A
1 628.5 - 1631.5	-60	30 kHz
1 631.5 - 1 636.5	-60	100 kHz
1 636.5 - 1 646.5	- 60	300 kHz
1 646.5 -1 666.5	- 60	1 MHz
1 666.5 - 2 200	-60	3 MHz
2 200 - 12750	-60	3 MHz

~~[NOTE 1: A range of values of -69 to -19 dB(W/30 kHz), linearly interpolated in dBW vs. frequency, was proposed for this frequency range.]~~

~~[NOTE 2: Mobile earth stations shall operate in the frequency band 1 610 - 1 626.5 MHz, taking into account the modification of the GLONASS frequency plan, such as:~~

~~before 1 999 – 1 620.6 to 1 626.5 MHz;~~

~~from 1 999 to 2 005 – 1 614.4225 to 1 626.5 MHz;~~

~~from 2 005 – 1 610 to 1 626.5 MHz]~~

~~[Maximum level of MES unwanted emissions shall not exceed -70~~

~~dBW/MHz in the GPS and GLONASS bands]~~

NOTE 2: With the purposes of GLONASS system receivers protection:

i) the MES should not operate in the following frequency bands :

- 1610.0 - 1623.0 MHz - up to 1999;
- 1610.0 - 1615.0 MHz - from 1999 to 2008.

ii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following frequency bands :

- 1610.0 - 1620.61 MHz up to 1999;
- 1610.0 - 1613.86 MHz from 1999 to 2008;

NOTE 3. Averaged over 20 mS

NOTE 3bis. [Average]. Measurement time to be determined.

NOTE 4: The value in this frequency range is bounded by the range -60 to -70.

~~NOTE 5. The band split shown in this table comes from ETSI document ETS 300 733~~

~~NOTE 6. The Russian Federation Administration expressed a preference to have these frequency bands combined.~~

~~NOTE 7. The Russian Federation Administration stated that it will require a value of [70 dB(W/MHz)] in the band 1590-1610 for the protection of the GLONASS system, unless otherwise agreed.~~

~~NOTE 8 The IJS Administration is presently considering emission limits (in dBW/MHz) ranging from -70 to -54 from the MSS community and -70 from the aeronautical community.~~

Specification

The maximum e.i.r.p. of the unwanted emissions inside the band 1 610,0 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz from MESs operating within the band 1 610,0 to 1 626.5 MHz shall not exceed the limits in tables A1, A2 or A3, as applicable. For non-continuous signals, the measurement shall be performed over the active part of the burst.

TABLE 2B-A2

Maximum unwanted emissions within the allocated band 1 610.0 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz of MES operating such that the nominated bandwidth is entirely or partially contained in the frequency band 1 618.25 to 1 626.5 MHz (NOTE 4) (NOTE 5)

Frequency Offset (NOTE 1) (kHz)	Carrier-on		
	e.i.r.p. (NOTE 3) (dBW)	Measurement bandwidth (kHz)(NOTE 2)	
0 to 160	- 35	30	
160 to 225	- 35 to - 38,5	30	
225 to 650	- 38.5 to - 45	30	
650 to 1 365	- 45	30	
1 365 to 1 800	- 53 to - 56	30	
1 800 to 16 500	- 56	30	

NOTE 1: Frequency offset is determined from:

i) the nearest edge of the nominated bandwidth of the nominal carrier closest to the MSS system operating in another assigned band within the band 1 610 to 1 626.5 MHz The frequency offset is measured in the direction of the adjacent MSS system.

ii) the upper edge of the nominated bandwidth of the carrier under test for emissions within the band 1 626.5 to 1 628.5 MHz.

NOTE 2: The measurement bandwidth used may be 3 kHz if the unwanted e.i.r.p. limits are reduced correspondingly.

NOTE 3: Linearly interpolated in dBW vs frequency offset.

NOTE 4: The MES shall include means of inhibiting transmissions when necessary to protect the Radio Astronomy Service in the 1 610.6 - 1 613.8 MHz band from emissions produced by the MES.

NOTE 5: With the purposes of GLONASS system receivers protection:

i) the MES should not operate in the frequency band 1618.25-1623.0 MHz up to 1999;

ii) the maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following bands:

- 1610.0 - 1620.61 MHz up to 1999;
- 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE 2B-A3

Maximum unwanted emissions within the allocated band 1 610.0 to 1 626.5 MHz and the band 1 626.5 to 1 628.5 MHz of MES operating such that the nominated bandwidth is entirely contained in the frequency band 1 610.0 to 1 618.25 MHz (NOTE 5)

Frequency Offset (NOTE 1) (kHz)	Carrier-on		
	e.i.r.p. (NOTE 3) (dBW)	Measurement bandwidth (kHz) (NOTE 2)	
0 to 160	- 32	30	
160 to 2 300	- 32 to - 56	30	
2 300 to 16 500	- 56	30	

NOTE 1: Frequency offset is determined from:

i) the nearest edge of the nominated bandwidth of the nominal carrier closest to the MSS system operating in another assigned band within the band 1 610 to 1 626.5 MHz The frequency offset is measured in the direction of the adjacent MSS system.

ii) the upper edge of the nominated bandwidth of the carrier under test for emissions within the band 1 626.5 to 1 628.5 MHz.

NOTE 2: The measurement bandwidth used may be 3 kHz if the unwanted e.i.r.p. limits are reduced correspondingly.

NOTE 3: Linearly interpolated in dBW vs frequency offset.

NOTE 4 The MES shall include means of inhibiting transmissions when necessary to protect the Radio Astronomy Service in the 1 610.6 - 1 613.8 MHz band from emissions

produced by the MES.

NOTE 5: With the purposes of GLONASS system receivers protection:

i) the MES should not operate in the following frequency bands :

- 1610.0 - 1618.25 MHz - up to 1999;
- 1610.0 - 1615.0 MHz - from 1999 to 2008.

ii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following frequency bands :

- 1610.0 - 1620.61 MHz up to 1999;
- 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE 2B-A4

Maximum unwanted emissions of MES carriers within the assigned band of CDMA carriers (NOTE 4)

Frequency offset (NOTE 1) (kHz)	**Carrier-on**		
	e.i.r.p. (NOTE 3) (dBW)	**Measurement bandwidth** (kHz) (NOTE 2)	
0 to 70	- 6 to - 20	30	
70 to 600	- 20 to - 28	30	
600 to 2 000	- 28 to - 45	30	
2 000 to 5 000	- 45 to - 69	30	
5 000 to 16 500	- 69	30	

NOTE 1: Frequency offset is determined from edge of nominated bandwidth.

NOTE 2: The measurement bandwidth used may be 3 kHz if the unwanted e.i.r.p. limits are reduced correspondingly.

NOTE 3: Linearly interpolated in dBW vs. frequency offset.

NOTE 4: With the purposes of GLONASS system receivers protection:

i) the MES should not operate in the following frequency bands :

- 1610.0 - 1623.0 MHz - up to 1999;
- 1610.0 - 1615.0 MHz - from 1999 to 2008.

ii) The maximum possible level of MES unwanted emissions should not exceed minus 70 dBW in 1 MHz in the following frequency bands :

- 1610.0 - 1620.61 MHz up to 1999;
- 1610.0 - 1613.86 MHz from 1999 to 2008;

TABLE 2B-A5

Maximum e.i.r.p. of the unwanted emissions in the carrier-off state for CDMA systems

Frequency (MHz)	**e.i.r.p. (dBW)**	**Measurement bandwidth**
0.1 - 30	- 87	10 kHz
30 - 1 000	- 87	100 kHz
1 000 - 12 750	- 77	100 kHz

NOTE: These values, and a corresponding measurement method, are specified in IEC (insert proper citation).

NOTE: Receiver Radiation is radio frequency energy that emanates from a device that intentionally generates RF energy for use within a device or that sends RF signals by conduction to associated equipment via connecting wiring while the transmitter is not in operation.

TABLE 2B-B1

Maximum Unwanted emission outside the band 1 980 - 2 010 MHz for CDMA systems~~*~~

Frequency (MHz)	**Carrier-on**		
	e.i.r.p. (dBW)	**Measurement bandwidth**	
	CDMA carriers (NOTE[1])	CDMA carriers	
0.1 - 30	- 66	10 kHz	
30 - 1 000	- 66	100 kHz	
1 000 - 1 559	- 60	3 MHz	
~~[~~1 559 - 1 610~~]~~	-70 ~~See NOTE 3~~	1 MHz	
[1 610 - 1 620.6]	~~[~~-70~~]~~	1 MHz	
[1 620.6 - 1 950]	- 60	3 MHz	
1 950 - 1 960	- 60	1 MHz	
1 960 - 1 970	- 60	300 kHz	
1 970 - 1 975	- 60	100 kHz	
1 975 - 1 978	-64 to -40	100 kHz	
1 978 - 1 980	The levels in Table 2B-B2 or Table 2B-B3 as appropriate for the frequency offset 0 - 2 MHz shall apply from 1 980 to 1 978 MHz		
1 980 - 2 010 (NOTE 2)	N/A	N/A	
[2 010 - 2 012	The levels in Table 2B-B2 or Table 2B-B3 as appropriate for the frequency offset 0 - 2 MHz shall apply from 2 010 to 2 012 MHz		
2 012 - 2 015	-40 to -64	100 kHz	
2 015 - 2 020	- 60	100 kHz	
2 020 - 2 030]*	- 60	300 kHz	
2 030 - 2 040	- 60	1 MHz	
2 040 - 2 600	- 60	3 MHz	
2 600 - 12 750	-60	3 MHz	
NOTE 1: Linearly interpolated in dBW vs. Frequency. ~~NOTE 3: Average.~~			

~~*Editor's NOTE: It is noted that there is a Region 2 co-primary allocation to the MSS in the band 2 010 - 2 025 MHz. Terminals operating in this band could have main emissions which would not be consistent with the values in this Table. This issue must be addressed in the final version of this table.~~

TABLE 2B-B2

Maximum unwanted emissions of CDMA carriers within the 1 980 - 2 010 MHz assigned band

Frequency offset (NOTE 1) (kHz)	Carrier-on		
	e.i.r.p. (NOTE 2) (dBW)	Measurement bandwidth (kHz)	
[0 to 70]	[- 6 to - 20]	[30]	
[70 to 600]	[- 20 to - 28]	[30]	
[600 to 2 000]	[- 28 to - 45]	[30]	
[2 000 to 5 000]	[- 45 to - 69]	[30]	
[5 000 to 30 000]	[- 69]]	[30]	
NOTE 1: Frequency offset is determined from edge of nominated bandwidth.			
NOTE 2: Linearly interpolated in dBW vs frequency offset.			

TABLE 2B-B3

Maximum e.i.r.p. of the unwanted emissions in the carrier-off state for CDMA Systems

Frequency (MHz)	e.i.r.p. (dBW)	Measurement bandwidth	Measurement method
0.1 - 30	- 87	10 kHz	peak hold
30 - 1 000	- 87	100 kHz	peak hold
1 000 - 12 750	- 77	100 kHz	peak hold

NOTE: These values, and a corresponding measurement method, are specified in IEC (insert proper citation).

NOTE: Receiver Radiation is radio frequency energy that emanates from a device that intentionally generates RF energy for use within a device or that sends RF signals by conduction to associated equipment via connecting wiring while the transmitter is not in operation.

CERTIFICATE OF SERVICE

I, Katharine B. Squalls, hereby certify that a true and correct copy of the foregoing "Supplement to Petition for Further Reconsideration" was mailed, first-class postage prepaid, this 27th day of March, 1997 to each of the following:

*Chairman Reed Hundt
Federal Communications Commission
1919 M Street, N.W.
Room 814
Washington, D.C. 20554

*Commissioner James H. Quello
Federal Communications Commission
1919 M Street, N.W.
Room 802
Washington, D.C. 20554

*Commissioner Susan Ness
Federal Communications Commission
1919 M Street, N.W.
Room 832
Washington, D.C. 20554

*Commissioner Rachelle B. Chong
Federal Communications Commission
1919 M Street, N.W.
Room 844
Washington, D.C. 20554

*Peter Cowhey, Acting Chief
International Bureau
Federal Communications Commission
2000 M Street, N.W., Room 849
Washington, D.C. 20554

*Tom Tycz, Chief
Satellite and Radiocommunication Division
International Bureau
Federal Communications Commission
2000 M Street, NW, Room 811
Washington, DC 20554

*Cecily C. Holiday
Deputy Chief
Satellite and Radiocommunication Division
Federal Communications Commission
2000 M Street, NW, Room 800
Washington, DC 20554

*Fern Jarmulnek, Chief
Satellite Policy Branch
Federal Communications Commission
2000 M Street, NW, Room 518
Washington, DC 20554

*Harry Ng
Federal Communications Commission
2000 M Street, NW, Room 512
Washington, DC 20554

*Steve Sharkey, Chief
Satellite Engineering Branch
Federal Communications Commission
2000 M Street, NW, Room 512
Washington, DC 20554

*Karl A. Kensinger
International Bureau
Satellite Radio Branch
Federal Communications Commission
2000 M Street, NW, Room 800
Washington, DC 20554

*Jennifer Gilsenan
Satellite and Radiocommunications Division
International Bureau
Federal Communications Commission
2000 M Street, N.W., Room 511
Washington, DC 20554

*Kathleen Campbell
International Bureau
Satellite Policy Branch
Federal Communications Commission
2000 M Street, NW, Room 800
Washington, DC 20554

Philip L. Malet
Alfred M. Mamlet
Steptoe & Johnson
1330 Connecticut Avenue, N.W.
Washington, D.C. 20036
Counsel for Motorola, Inc.

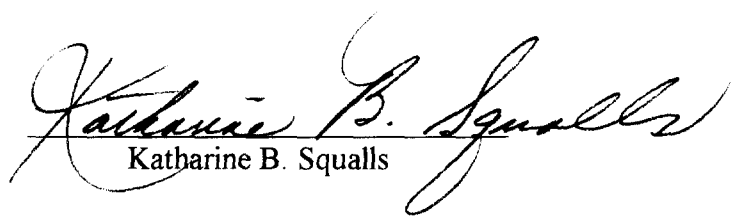
Michael D. Kennedy
Vice President and Director
Regulatory Relations
Motorola, Inc.
1350 I Street, N.W.
Suite 400
Washington, DC 20005

William F. Adler
Vice President and Division Counsel
Globalstar
3200 Zanker Road
San Jose, CA 95134

William D. Wallace
Crowell & Moring
1001 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2595
Counsel for L/Q Licensee, Inc.

Leslie Taylor
Leslie Taylor Associates
6800 Carlynn Court
Bethesda, MD 20817
Counsel for L/Q Licensee, Inc.

John L. Bartlett
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, DC 20006
Counsel for Aeronautical Radio, Inc.



Katharine B. Squalls